AEROMOTIVE
Part # 17150
700HP Hot Rod EFI Kit
INSTALLATION INSTRUCTIONS

CAUTION:

Installation of this product requires detailed knowledge of automotive systems and repair procedures. We recommend that this installation be carried out by a qualified automotive technician.

Installation of this product requires handling of gasoline. Ensure you are working in a well ventilated area with an approved fire extinguisher nearby. Extinguish all open flames, prohibit smoking and eliminate all sources of ignition in the area of the vehicle before proceeding with the installation.

When installing this product, wear eye goggles and other safety apparel as needed to protect yourself from debris and sprayed gasoline.

WARNING!

The fuel system is under pressure. Do not open the fuel system until the pressure has been relieved. Refer to the appropriate vehicle service manual for the procedure and precautions for relieving the fuel system pressure.

Aeromotive system components are not legal for sale or use on emission controlled motor vehicles.

This kit contains the following parts:

1 ea p/n 16301 Fuel Pump Wiring Kit (includes):
- 1 ea 3ft length of 10 ga. Black wire
- 1 ea 25ft length of 10 ga. Red wire
- 1 ea 30 amp circuit breaker
- 1 ea 30 amp automotive relay
- 2 ea blue female blade connector
- 2 ea yellow female blade connector
- 5 ea yellow #10 stud ring connector
- 1 ea yellow 3/8" stud ring connector
- 6 ea tie-wraps

1 ea p/n 11106 700HP Fuel Pump
1 ea p/n 12304 Filter 100 Micron SS
1 ea p/n 12301 Filter 10 Micron Paper
1 ea p/n 13109 Fuel Pressure Regulator
4 ea AN-06 o-ring
1 ea AN-08 o-ring
4 ea AN-10 o-ring
3 ea p/n 15606 ORB-06 to AN-06 male flare
2 ea p/n 15609 ORB-10 to AN-06 male flare
2 ea p/n 15610 ORB-10 to AN-08 male flare
1 ea p/n 15633 0-100 PSI Pressure Gauge

Compatible Fuels:

Pump Gas, Race Gas, Diesel
E85, Alcohol/Ethanol

This kit assumes you have a sumped fuel tank or fuel cell with accommodations for an AN-08 Supply line and an AN-06 return line. Undersized fuel tank pickups will not work properly with Aeromotive fuel systems, limiting both service life of the pump and potentially limiting its ability to produce the rated fuel flow necessary to support the engine. If your fuel tank is not sumped, to assure both pump performance and optimum vehicle drivability, we recommend installation of the Aeromotive P/N 18650 Baffled Sump, by a qualified professional.

Installation requires the use of aftermarket fuel rails, or an OEM fuel rail with an appropriate OEM to AN adapter. See Section 1 for typical OEM fuel rail adapter fittings. Contact Aeromotive for the availability of aftermarket fuel rails and other adapter options.

This kit does not include fuel lines, the use of appropriate high pressure rated fuel fittings and lines is required. Contact Aeromotive for your high pressure fuel line needs.

The following steps are typical of most installations:

Section 1 – OEM Fuel Rail adapter Fittings

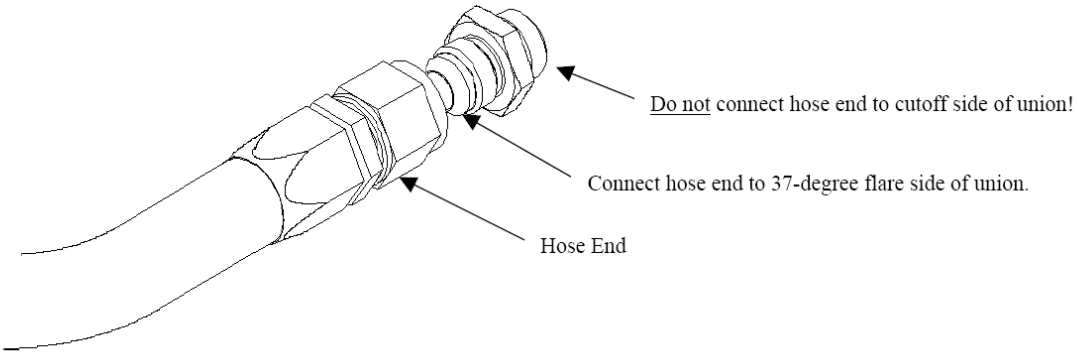
Section 2 - Fuel Pump Installation

Section 3 – Fuel Regulator Installation and Fuel Line Plumbing

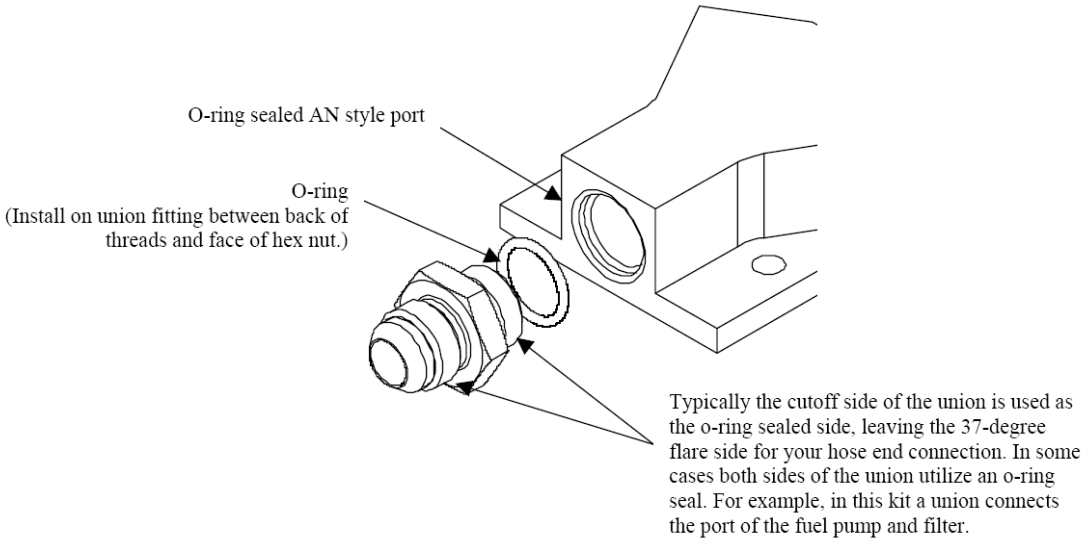
Section 4 – Electrical Installation

Section 5 – Final Checks and System Start-up

Typical hose end to fitting connection:

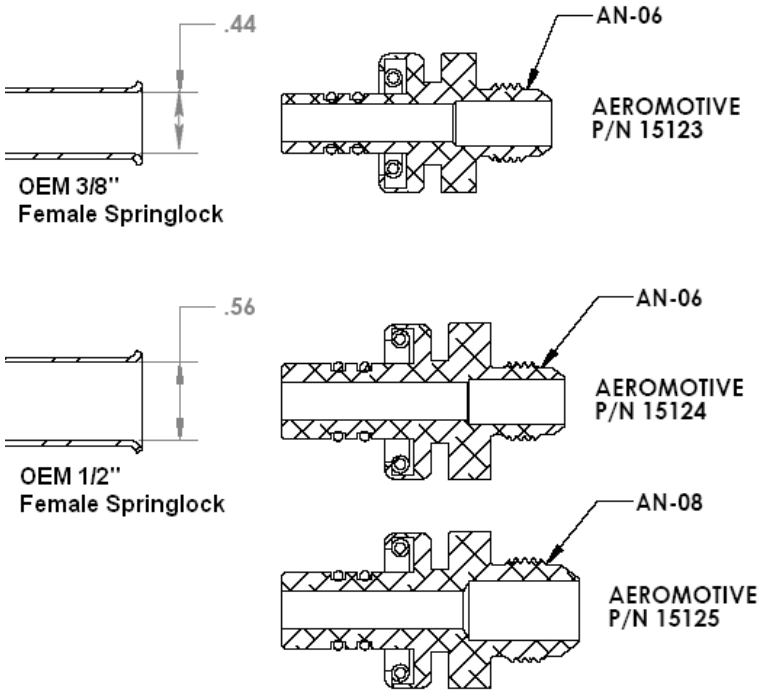


Typical o-ring sealed port connection:

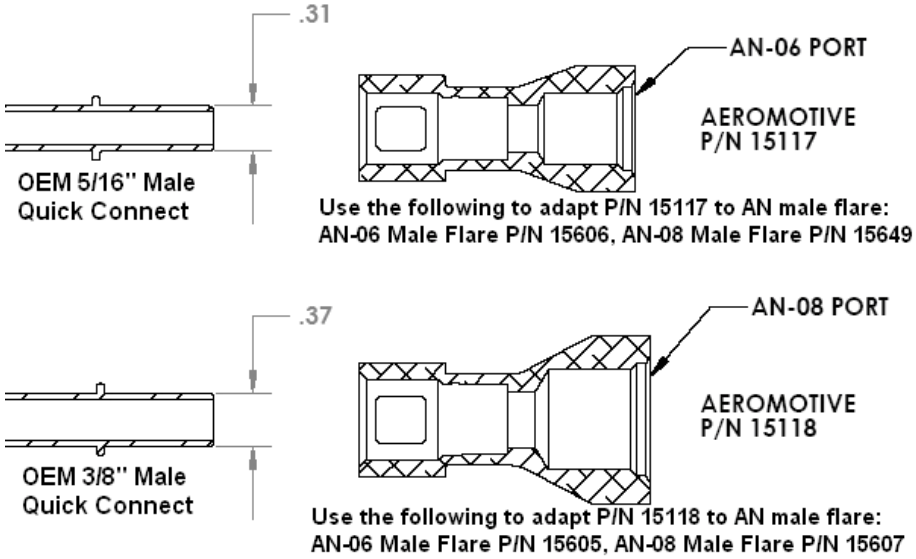

O-ring sealed AN style port
O-ring
(Install on union fitting between back of threads and face of hex nut.)
Typically the cutoff side of the union is used as the o-ring sealed side, leaving the 37-degree flare side for your hose end connection. In some cases both sides of the union utilize an o-ring seal. For example, in this kit a union connects the port of the fuel pump and filter.

Section 1 – OEM Fuel Rail adapter fittings:

Typical OEM fuel rail connections are shown on the left with the appropriate AN style adapter fitting shown to the right. If utilizing the OEM fuel rail, you must identify the type and size connector it is equipped with. Then, you must obtain the correct OEM to AN connection adapter, supporting the desired AN line size, before final fuel system connections can be made. Note, certain OEM to AN adapters may require additional fittings to present the desired AN size male connection point, as noted below. Please Contact the Aeromotive Tech Department with any questions or for additional fitting options.



Note: “Springlock” style connectors are most commonly found on Ford related products, for example many Ford fuel rails utilize the female side of the springlock connector. However, this type may be found on other OEM applications as well.


.31
OEM 5/16" Male
Quick Connect
AN-06 PORT
AEROMOTIVE
P/N 15117
Use the following to adapt P/N 15117 to AN male flare:
AN-06 Male Flare P/N 15606, AN-08 Male Flare P/N 15649
.37
OEM 3/8" Male
Quick Connect
AN-08 PORT
AEROMOTIVE
P/N 15118
Use the following to adapt P/N 15118 to AN male flare:
AN-06 Male Flare P/N 15605, AN-08 Male Flare P/N 15607

Note: “Quick-Connect” style connectors are commonly found on GM products, as well as Ford and other OEM applications. The Quick Connect is often found under the hood, at the fuel rail and in the rear at the fuel tank and possibly the fuel filter for GM. It is also commonly found in the rear, at the fuel tank and fuel filter, in some OEM Ford applications.

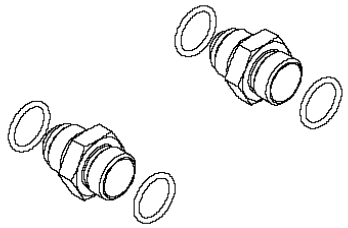
Section 2 - Fuel Pump Installation:

2-1. Once the engine has been allowed to cool, disconnect the negative battery cable and relieve the fuel system pressure.

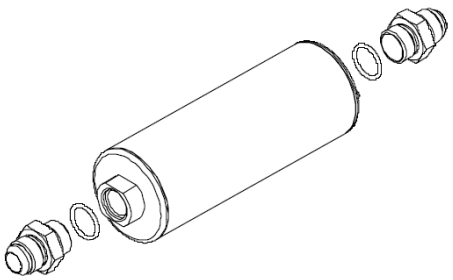
2-2. Raise the vehicle and support it with jack stands.

2-3. Referring to the appropriate vehicle service manual for instructions, drain, disconnect any electrical and fuel component connections.

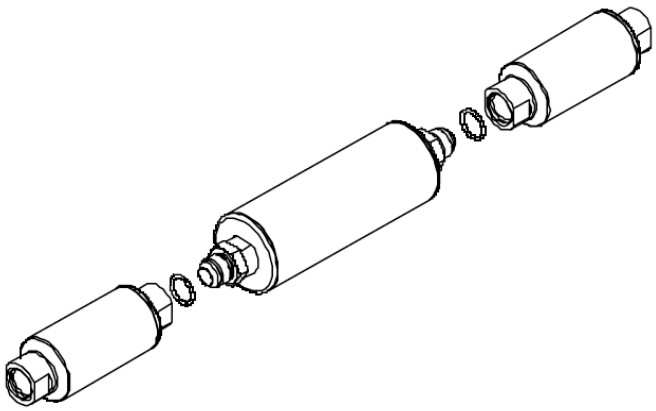
2-4. In the kit, find one ORB-10 to AN-08 male flare fitting, one ORB-10 to AN-06 male flare fitting, two AN-10 o-rings, one AN-08 o-ring and one AN-06 o-ring. Install the appropriate size o-ring, one on each end of both male flare and ORB sides of each fitting.



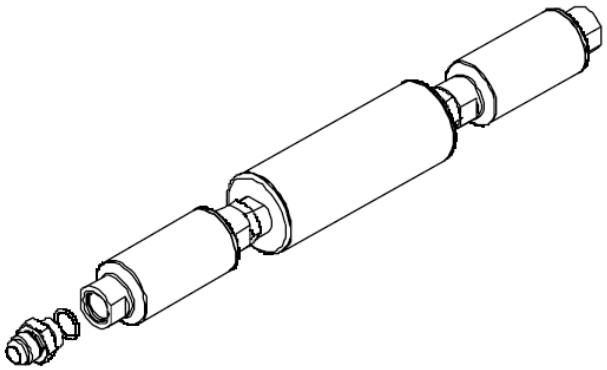
2-5. Install each of the two fittings into each end of the Aeromotive fuel pump, with the male-flare side into the pump and the ORB side pointing out.



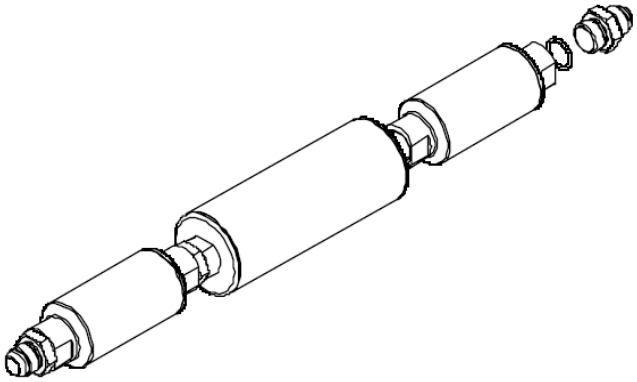
2-6. Note the engraved “INLET” on the inlet end of the pump and install the provided inlet fuel filter, Aeromotive p/n 12304, by threading the filter outlet port onto the male ORB side of the fuel pump inlet fitting with o-ring. On the fuel pump outlet, install Aeromotive p/n 12301 by threading the filter inlet port onto the male ORB side of the pump outlet fitting. If you get the two filters mixed-up, the 12304 inlet filter will have a 100 micron stainless steel screen-mesh (silver wire) filter element inside, where as the 12301 outlet filter will have a 10 micron fabric filter element (tan color) inside.



2-7. Install one of the supplied AN-10 o-rings on the ORB-10 side of the ORB-10 to AN-08 male flare fitting and install on the inlet side of the inlet filter, as seen below.



2-8. Install one of the supplied AN-10 o-rings on the ORB-10 side of the ORB-10 to AN-06 male flare fitting, and install the fitting on the outlet side of the outlet filter.



2-9. Find a suitable mounting location for the above pump / filter assembly. Typical mounting locations include mounting the fuel pump to the fuel tank shield or mounting to the inside of the frame rail. The fuel pump should be mounted as close to the fuel tank as possible and as low as possible, with the bottom of the pump preferably on a plane even with or lower than the bottom of the fuel tank. Using the fuel pump mounting clamps as a guide, mark the four pump mounting holes. Ensure there are no obstructions behind the mounting surface and drill four ¼" mounting holes.

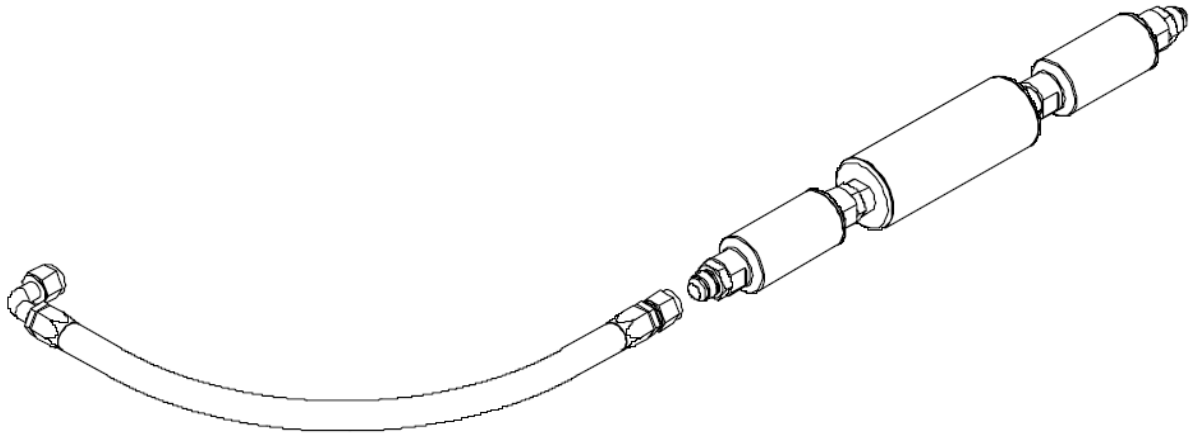
2-10. If you are using the plastic fuel tank shield for mounting your fuel pump, secure the fuel pump to the plastic fuel tank shield by installing four ¼" carriage bolts (not included) from the inside of the fuel tank shield, through the fuel tank shield and through the fuel pump mounting holes. Install four flat washers and nuts on the bolts and tighten. Inspect the inside of the plastic fuel tank shield for any sharp edges that could puncture the fuel tank. If any sharp edges are found, correct before proceeding.

2-11. If you are mounting the fuel pump in some other fashion, secure the fuel pump to the mounting surface using four ¼" bolts, nuts, and lock washers (not provided). Note: Aeromotive offers a fuel pump isolation mounting kit, available under P/N 11601. This kit provides the mounting hardware to mount the fuel pump and is ideal for applications where it is desirable to minimize vibration and noise transmission between the fuel pump and the chassis (sold separately).

2-12. Using the mounted pump assembly and the fuel cell / fuel tank as a guide, plumb the fuel pump inlet line using AN-08 steel braided fuel line (Not provided) or a suitable 1/2" fuel line with a minimum of 7/16" ID.

2-13. Using the above steel braided hose assembly, connect one end to the outlet of the fuel tank sump and the other end to the inlet of the filter / fuel pump assembly and tighten.

Note: To ease filter inspection and service, you may install a fuel shut off valve between the fuel tank outlet and the fuel pump / filter assembly inlet. Standalone shut-off valves are available from most popular racing fitting manufactures; Peterson, Aeroquip, Earl's, Goodridge, Russell, etc. However, not all shut off valves available are suitable. Before you purchase a shut off valve, be certain to establish it maintains the correct AN-10 i.d. (9/16" or larger) throughout its internal flow path. Alternately, Aeromotive offers an ORB-10 inlet fuel filter with 100-micron element and integral shutoff valve, under p/n 12331.



Determine an approximate mounting location for the supplied regulator, considering it should be as reasonably close to the planned fuel rail connection point as possible, but not in close proximity to extreme heat such as found near exhaust system components. From there,, plan a route to run an AN-06 or 5/16" ID fuel return line back to the fuel tank or fuel cell return port.

2-14. Thread one end of the AN-06 return line onto the AN-06 return line accommodations of your fuel tank or fuel cell and tighten. Note: the point of return into the tank is important; do not place the return fitting in the tank near the outlet fitting where the pump feed line connects unless sufficient baffling is in place to separate the ports, ensuring the return flow does not upset or detract from the outlet flow to the pump.

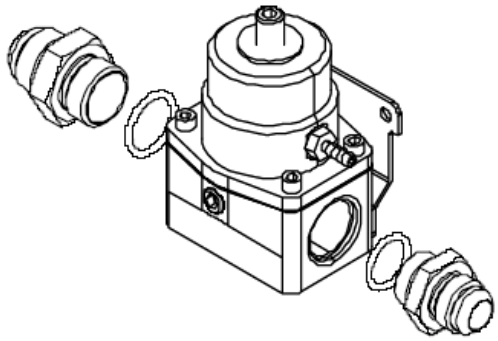
Note: Be sure to route all fuel lines clear of any moving suspension or drivetrain components and any exhaust components! Protect fuel lines from abrasion and road obstructions or debris.

Section 3 – Fuel Regulator Installation and Fuel Line Plumbing

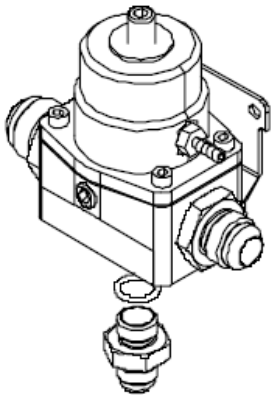
3-1. In the vehicle's engine compartment, near the fuel rail inlet, mount the supplied fuel pressure regulator in the location established in step 2-15. Using the supplied mounting bracket as a template, mark the bracket mounting holes and drill to accept a #10 sheet metal screw or equivalent nut/bolt and lock washer assemblies (not provided).

3-2. With the bracket attached to the regulator, mount the bracket and regulator to the vehicle.

3-3. Install two of the supplied AN-06 o-rings on the cutoff side of two ORB-06 to AN-06 male flare adapters and install in each of the AN-06 ports located on the sides of the supplied fuel pressure regulator. For optimum fuel system performance, Aeromotive recommends a true, dynamic, return style fuel system. This includes installing the regulator after, or on the outlet end of, the fuel rail (Option A in the plumbing diagram below.) If your engine has only one fuel rail, plug one of the regulator side ports using an AN-06 port plug P/N 15626 (not provided) and connect the remaining regulator side port to the outlet end of the fuel rail (Option B in the plumbing diagram below) .



3-4. Install the supplied AN-06 o-ring on the cutoff side of the AN-06 cutoff union fitting and install it into the AN-06 port located on the bottom of the supplied fuel pressure regulator.



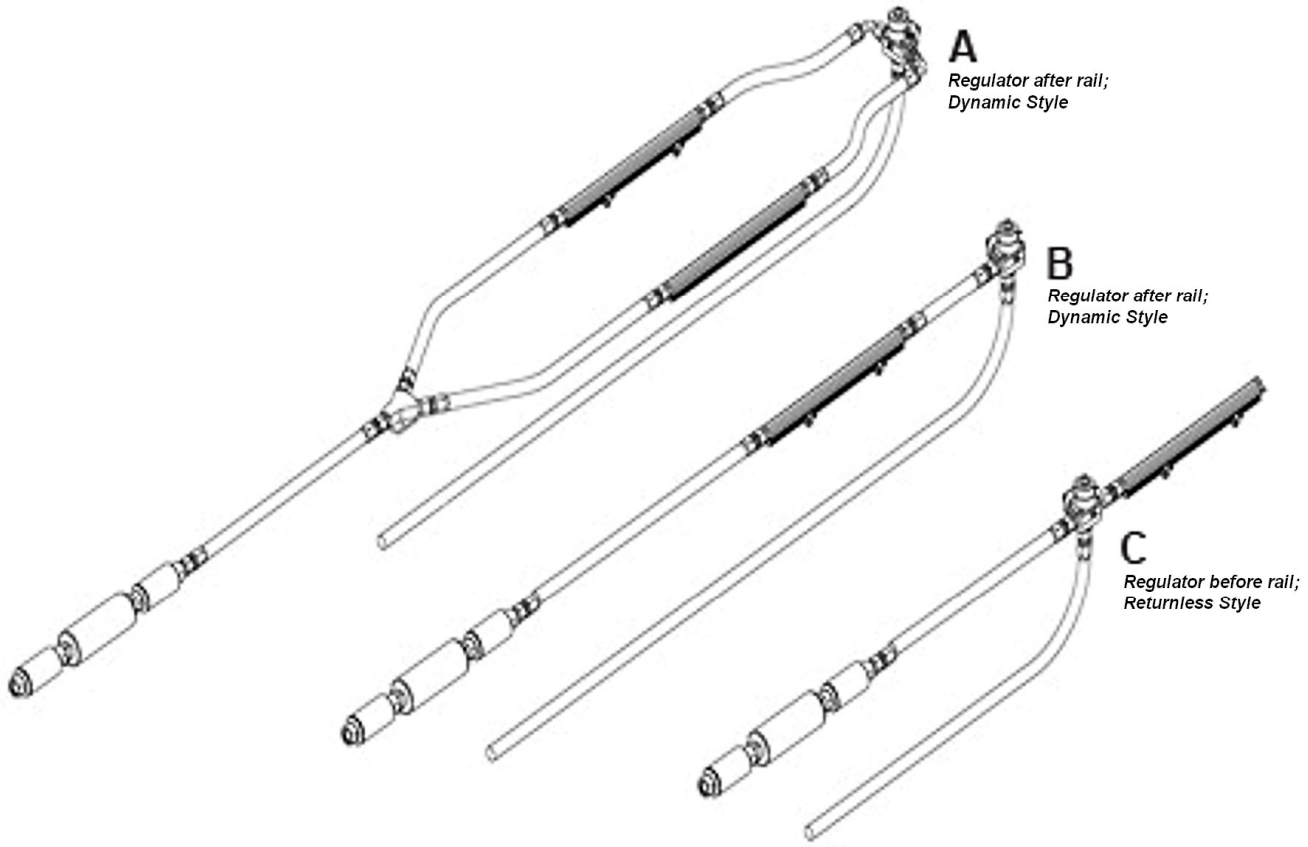
3-5. If you are using the OEM "returnless style" fuel rails; Use the adapter fitting selected from section 1 and attached to the fuel rail. Run an AN-06 or equiv. high pressure fuel line from either side fitting in the regulator to the fuel rail adapter. Then, connect the AN-06 supply line from the fuel pump provided to the opposite regulator side port. Finally connect the AN-06 return line to the bottom, regulator return fitting (Option C in the plumbing diagram below). Now Proceed to step 3-6

Note: Be sure to route all fuel lines clear of any moving suspension or drivetrain components and any exhaust components! Protect fuel lines from abrasion and road obstructions or debris.

Optional Fuel Rail Plumbing Schematics:

Return Style, Aftermarket Billet fuel rails with multiple connection points:
If you are using a set of aftermarket fuel rails; Starting from the outlet end of the fuel rails, plan a route to run an AN-06 or equiv. high pressure fuel line from each fuel rail to each side of the regulator. In the case of a single fuel rail system, plan one line from the fuel rail outlet to either regulator side port and plug the remaining side port. Then, plan a return line AN-06 from the fuel pressure regulator back to the point where the return line connects to the fuel tank. See the diagram below, examples A and B, for a typical return style fuel rail system

"Returnless" Style, OEM Fuel Rails with single connection point:
If you are using OEM "returnless" style fuel rails; Starting from the fuel rail adapter fitting, plan a route to run an AN-06 or equiv. high pressure fuel line to the regulator side port opposite the one connected to the fuel pump outlet. For optimum flow and pressure control, ensure the regulator is located as close to the fuel rail inlet adapter fitting as possible, while avoiding close proximity to hot exhaust components. See the diagram below, example C, for a typical "returnless" style fuel rail system. Though not illustrated, the use of OEM "returnless" fuel rails along with the OEM adapter determined in Section 1 would plumb as seen in example C, with the regulator located as close to the fuel rail inlet adapter as possible.



3-6. Using the above steel braided hose assemblies, connect the system together as indicated and tighten.

Note: Be sure to route all fuel lines clear of any moving suspension or drivetrain components and any exhaust components! Protect fuel lines from abrasion and road obstructions or debris.

3-7. Once the regulator is installed, attach the supplied fuel pressure gauge to the 1/8 NPT port on the fuel pressure regulator.

Section 4 - Electrical Installation:

4-1. Find a suitable place to mount the supplied relay, the relay is typically mounted by the OEM fuel pump wiring connector ***(<u>Never</u> mount the relay inside of the fuel tank or next to fuel tank vents!)***. Ensure the relay and any associated parts are clear of the exhaust, any moving suspension or drivetrain components and any possible road obstructions or debris.

4-2. Attach the OEM fuel pump wires (These typically are the red and black wires from the OEM wiring harness going to the fuel tank) to relay terminals 85 and 86 using two of the supplied blue female blade connectors (See Figure 4-1 Below). Alternately, connect a wire +12 VDC wire to terminal 85 from a dedicated toggle switch or from a key-on/crank hot source suitable to trigger the relay to turn the pump on. Connect Terminal 86 to reliable, clean chassis ground.

Note: Be sure to route all electrical wires clear of any moving suspension or drivetrain components, and any exhaust components! Protect wires from abrasion and road obstructions or debris.

4-3. Find a suitable location for mounting the supplied circuit breaker. For optimal circuit protection, the circuit breaker needs to be mounted as close to the battery as possible.

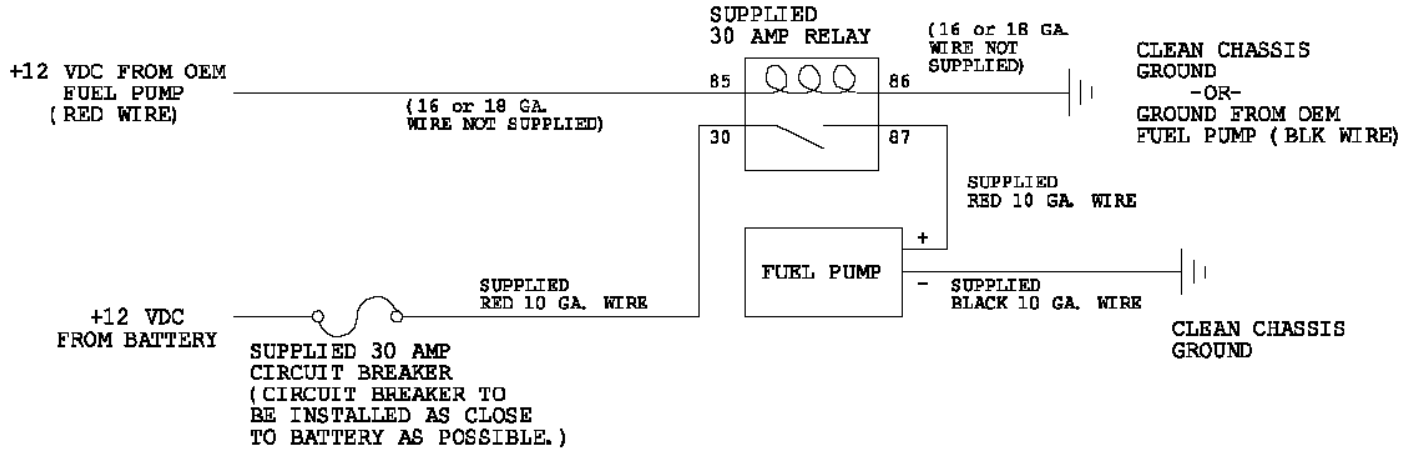
4-4. Connect terminal number 30 on the relay to the circuit breaker by using the supplied red 10 ga. wire, one of the yellow female blade connectors on the relay end of the wire and one of the yellow #10 ring connectors on the circuit breaker side of the wire.

4-5. Connect terminal number 87 on the relay to the positive terminal on the fuel pump. This is accomplished by using the supplied red 10 ga wire, one of the yellow female blade connectors on the relay side of the wire and one of the yellow #10 ring connectors on the fuel pump side of the wire.

4-6. Connect the negative terminal on the fuel pump to a clean chassis ground using the supplied black 10 ga wire and two yellow #10 ring connectors.

4-7. Connect 12VDC to the circuit breaker using the supplied red wire and one of the yellow #10 ring connectors and the supplied yellow 3/8” ring connector.

4-8. Ensure that electrical components and wires are connected properly and are clear of any moving suspension or drivetrain components and any exhaust components! Protect wires from abrasion and road obstructions or debris.



Section 5 – Final Checks and System Start-up

5-1. **Ensure that any spilled gasoline and any gasoline soaked shop towels are cleaned up and removed from the vicinity of the vehicle!**

5-2. Carefully lower the car onto the ground.

5-3. Fill the fuel tank with gasoline and check for any leaks in the system, if any leaks are found repair immediately.

CAUTION: While performing the following steps, if any fuel leaks are detected, immediately turn the ignition OFF, remove any spilled fuel and repair the leak(s) before proceeding!

5-4. Reconnect the battery and turn the ignition to the ON position **WITHOUT** starting the car. After several seconds, check the fuel pressure. If there is no fuel pressure, turn the ignition key to the OFF position, wait one minute, return the ignition to the ON position, and recheck the fuel pressure. Repeat this ignition OFF and ON procedure until the fuel pressure gauge registers fuel pressure.

5-5. With the fuel pressure gauge registering fuel system pressure, check for fuel leaks throughout the entire fuel system! If any fuel leaks are found, turn the ignition key to the OFF position, remove any spilled fuel and repair the leak before proceeding!

5-6. Once the fuel pressure gauge registers fuel system pressure and there are no fuel leaks, start the engine and adjust the regulator to the desired fuel pressure. Turning the adjustment screw clockwise will increase fuel pressure. OEM regulators are typically set at approximately 43 psi, without the vacuum line attached. The fuel pressure adjustment range for this regulator is 35-75 psi.

5-7. Once the desired fuel pressure is achieved, tighten the regulator adjustment jam nut and attach the vacuum line.

5-8. Test drive the car to ensure proper operation and re-check the fuel system for leaks. **If any leaks are found, immediately discontinue use of the vehicle and repair the leak(s)!**

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